

**19 March 2019:**

The Houston Fire Department, Pasadena Fire Department, and Channel Industries Mutual Aid continued performing fire suppression activities.

As of 1000 hours, of the fifteen 80,000-barrel (bbl) tanks in the affected tank farm, Tanks 80-2, 80-3, 80-5, 80-6, 80-7, 80-8, and 80-15 were completely involved in the fire. Tanks 80-9 and 80-12 were empty and had collapsed. Tanks 80-1, 80-4, 80-10, and 80-13 were not currently involved.

The U.S. Environmental Protection (EPA) Team conducted handheld air monitoring downwind of the fire for volatile organic compounds (VOCs), oxygen (O<sub>2</sub>), lower explosive limit (LEL), carbon monoxide (CO), hydrogen sulfide (H<sub>2</sub>S), and particulate matter with a diameter less than 2.5 micrometers (PM<sub>2.5</sub>). The EPA Team observed one detection of CO at 9.0 parts per million (ppm), but no other detections of these compounds exceeded background concentrations. The EPA Airborne Spectral Photometric Environmental Collection Technology (ASPECT) aircraft flew over the incident site, and preliminary results indicated no significant detections were measured. The air monitoring results from ASPECT were compared to the Texas Commission on Environmental Quality (TCEQ) short-term Air Monitoring Comparison Values (AMCVs) and indicated no exceedances of the short-term AMCVs. Acetone, 1-butene, isoprene, and 2-butene were detected at or below 1.0 ppm at several hundred meters in the atmosphere. ASPECT will continue to be used to conduct air monitoring until called to demobilize.

The ASPECT aircraft conducted an additional flight over the Intercontinental Terminals Company (ITC) fire site to assess the plume geometry. The findings showed the plume was about 47 miles long and 17 miles wide at the largest extent, and ranged in altitude from a floor of 1,500 feet to a ceiling of 5,000 feet. No chemical detections were reported on this flight.

Two EPA teams were on-site and continued conducting air monitoring 24 hours a day throughout the plume. The teams also completed air monitoring around the 14 identified Superfund National Priorities List (NPL) sites to determine any effects of the plume at those sites; no detections were identified. EPA collected 23 air monitoring readings in the community; no detections were identified.

Traces of firefighting foam were observed in the ditch along Tidal Road and Tucker Bayou by the U.S. Coast Guard (USCG).

Harris County Hazardous Materials Response Team (HMRT) and the Harris County Pollution Control Services Department (PCSD) personnel also conducted air monitoring. Harris County PCSD and Harris County HMRT reported no detected concentrations of hazardous contaminants. Harris County PCSD was also conducting air monitoring to address complaints that have been received by their office.

ITC, the potentially responsible party (PRP), had contractor (CTEH) personnel on-site performing community air monitoring for VOCs, LEL, H<sub>2</sub>S, O<sub>2</sub>, naphtha, naphthalene, benzene, toluene, xylene, formaldehyde, hexane, sulfur dioxide (SO<sub>2</sub>), nitrogen dioxide (NO<sub>2</sub>), and PM<sub>2.5</sub>.

ITC continued to take hourly water samples at the ditch feeding into Tucker Bayou and to send the samples to an outside laboratory for analysis. Initial results were expected to be available later in the week. There was boom deployed in the ditch to capture the foam.

ITC collected 153 air monitoring readings. No results above the detection limit were observed.

The City of Pasadena also was conducting air monitoring; no results were available.

**20 March 2019:**

The initial fire was extinguished at 0300 hours. Foam and water continued to be applied to all tanks to ensure that the fire did not reignite and to reduce vapor emissions. The possibility of VOC levels increasing with the fire extinguished was expected.

At 1749 hours, Tanks 80-8 and 80-5 reignited, but the fire was extinguished almost immediately. Air monitoring continued throughout the night and continued into 21 March 2019.

At 2120 hours, outfall #003 was closed, and the secondary containment contained approximately 2 feet of material. Foam and water continued to be applied to the entire tank farm.

Skimmers were actively removing foam from the bayou, pumping the material into vacuum trucks, and storing the material in frac tanks on-site.

EPA began conducting water sampling in the ditch along Independence Parkway and Tidal Road, outfall #003, and the confluence of the ditch and Tucker Bayou. Because of elevated benzene levels, the sampling team was only able to grab one sample from the dock area on Tucker Bayou. Samples were analyzed for VOCs, semivolatile organic compounds (SVOCs), chemical oxygen demand (COD), oil and grease, and per- and polyfluoroalkyl substances (PFAS)/perfluorooctanoic acid (PFOA).

Throughout the day, air monitoring teams focused on the environmental justice areas downwind of the site. Elevated levels of benzene were detected around the site, but not in the community. Several school districts had decided earlier to stay closed on Wednesday due to the ongoing firefighting efforts and plume issues.

The EPA On-Scene Coordinator (OSC) participated in a public meeting with Congresswoman Sheila Jackson Lee in Galena Park regarding EPA's role on the response. Approximately 100 people attended.

EPA continued to conduct handheld air monitoring at 35 locations. For total VOCs, six monitoring locations had concentrations above the detection level, but not at a level of concern.

Instantaneous monitoring of VOCs was conducted by ITC. As of 2030 hours, ITC had taken 427 readings for VOCs, with 2 detections. There are still no readings above health action levels.

ITC also used a mobile air monitoring unit. At the request of Unified Command, ITC monitored identified environmental justice areas, as well as areas around schools in the downwind areas of the plume. The Manchester community was the focus of the monitoring efforts during the evening of 19 March 2019.

ITC placed double containment boom along Tucker Bayou. Skimmers removed foam from the bayou, pumped the material into vacuum trucks, and stored the material in frac tanks on-site.

ITC contracted with The Response Group, an incident management team, to help manage the incident and stand up Incident Command Structure (ICS).

ITC continued to take hourly water samples at the ditch feeding into Tucker Bayou and sent the samples to an outside laboratory for analysis.

#### **21 March 2019:**

At approximately 0300 hours, an elevated benzene level over 1.0 ppm forced the movement of the incident command post (ICP) from the tank farm area to the ITC facility on Ethyl Road and Highway 225.

Fire operations were still ongoing, which included maintaining of the foam blanket in the secondary containment to prevent reignition of hot spots. Foam was being added approximately three times every 4 hours at a rate of 180,000 gallons of foam per foaming operation. The facility stated that there was approximately 2 feet of free board within the secondary containment, which has a capacity of 175,000 bbl (7,380,000 gallons). The facility planned to open outfall #003 during foaming operations to manage water in the secondary containment and to maintain current levels. TCEQ and EPA requested water sampling be conducted each time outfall #003 is opened. This will be added to the Water Sampling Plan.

EPA will conduct water sampling for per- and polyfluoroalkyl substances (PFAS)/PFOA analysis, COD, VOCs, SVOCs, and oil/grease. The samples will be collected at locations along Buffalo Bayou and the San Jacinto River.

EPA received the first preliminary water sample results from ITC. Elevated concentrations of COD and oil/grease, as well as benzene, were detected, as expected.

The Trace Atmospheric Gas Analyzer (TAGA) mobile laboratory arrived on-site and initiated air monitoring in communities around the facility.

EPA conducted handheld air monitoring at 63 locations. Results were reported above the detection limit at one location for total VOCs and benzene (0.9 ppm). Benzene was detected at this location above the TCEQ AMVC for benzene (0.18 ppm). This air monitoring location was adjacent to the ITC facility. These instantaneous detections were shared with TCEQ to determine if there was a short-term health concern.

The TAGA mobile laboratory began mobile air monitoring in the downwind areas between 0800 and 0830 hours. TCEQ teams, ITC, and the National Guard's 6<sup>th</sup> Weapons of Mass Destruction Civil Support Team (CST) also conducted air monitoring throughout the community.

ITC initiated sampling of all brands of foam used during the response to determine if any contained PFOS and PFOA. The analysis was expected to take 5 days.

ITC stated a surface drain was releasing water that flooded around the tank farm, but did not contain any product.

ITC mobilized additional resources (e.g., skimmers, vac trucks, and frac tanks) to conduct cleanup operations at the Tucker and Buffalo Bayous.

ITC continued to take water samples every 2 hours at the ditch feeding into Tucker Bayou and sent the samples to an outside laboratory for analysis.

ITC continued air monitoring in the communities around the facility. As of 1400 hours, they had conducted 596 VOC readings and 503 benzene readings in the communities. No readings above action levels were recorded. ITC air monitoring within the site and in adjacent industrial facilities detected elevated levels of benzene.

ITC worked on a plan for managing the water in the secondary containment once the fire operations ceased. The facility planned to pump the water into an empty tank within ITC's facility and then dispose of it as waste. They coordinated with TCEQ water and Resource Conservation and Recovery Act (RCRA) programs on this strategy.

ITC started removing product from one of the pyrolysis gas tanks (80-10) and transferring it to an empty tank in another part of the facility (100-28).

EPA detected a benzene level of 1.8 ppm in a residential area south of Highway 225 and informed Unified Command. Subsequently, the City of Deer Park issued a community shelter-in-place and closed Highway 225. This action took place at 0450 hours. The shelter-in-place for Deer Park was lifted at 1200 hours.

The U.S. Chemical Safety Board was on-site and interviewed several persons involved in the response. They stayed for several days to conduct an investigation.

**22 March 2019:**

Foam continues to be applied to the secondary containment and tanks to reduce emissions and reignition of hot spots.

At 0300 hours, approximately 145 totes (250 gallons each) of foam remained. Approximately 200 additional totes were en route and arrived throughout the day.

A very small flash fire occurred at the manifold (at the edge of the tank farm) at approximately 1900 hours as a result of insulation situated next to a charged steam line. The fire lasted less than 5 minutes.

A partial breach of the tank farm containment wall on the northeast side near Tank 80-7 occurred at approximately 1200 hours, releasing approximately 40,000 bbl of product, firefighting water, and foam into the roadside ditch along Tidal Road. A shelter-in-place was placed for industrial neighbors and the Battleship Texas and Monument State Park.

At 1220 hours, the USCG Captain of the Port closed the Houston Ship Channel to all traffic.

ITC continued air monitoring in the communities around the facility. There was one detection of benzene at 1.05 ppm close to the Battleship Monument north of the facility. Subsequent monitoring showed no detections. By 1230 hours, ITC had taken 909 VOC readings with 52 detections, as well as 745 benzene readings with 51 detections.

At 1249 hours, ITC notified the National Response Center that the released material had reached Tucker Bayou. Based on trajectory from National Oceanic and Atmospheric Administration (NOAA) oceanographer, if the released material from the containment area escaped the boom, based on the tidal cycle, the material would transport to the area of Lynchburg Ferry. In case of a flood tide, it would surge back into Buffalo Bayou. Additional boom was placed along the ditch leading to Tucker Bayou and Buffalo Bayou. ITC's contractor rebuilt the containment wall using clay material and continued to improve it during the day.

EPA water sampling was cancelled due to health and safety reasons upon learning of the secondary containment breach.

At approximately 1540 hours, three tanks reignited. The fire spread from the containment area through the breached containment wall into the ditch on Tidal Road. Foam was applied to the tanks and the ditch to fight the fire. A shelter-in-place recommendation was in effect for industrial neighbors, Battleship Texas, and Monument State Park. There was no shelter-in-place for the city of Deer Park.

During and after the fire and the breach of the secondary containment, several readings of benzene above 1.0 ppm were detected (highest was 16.5 ppm near National Tank Services) by the various entities conducting air monitoring through the afternoon and night. These readings were located along the Ship Channel and Channelview.

EPA conducted surface water sampling at five locations along Buffalo Bayou. One location was above the confluence of Tucker Bayou and Buffalo Bayou, one location was at the confluence of Tucker Bayou and Buffalo Bayou, and three locations were downstream from the confluence of Tucker Bayou and Buffalo Bayou.

EPA conducted air sampling using TAGA and analyzed the air samples for benzene, toluene, and xylene. The TAGA air sampling results were compared to the TCEQ short-term AMCVs and indicated no exceedances of the short-term AMCVs for toluene and xylene. The TAGA air sampling results showed 11 locations where the short-term AMCV for benzene was exceeded. These locations corresponded to gasoline stations and traffic congestion along the Sam Houston Tollway (Beltway 8). These AMCV exceedances for benzene were unrelated to the ITC site.

The ASPECT aircraft found no exceedances of the TCEQ comparison values. ASPECT conducted a screening level assessment to evaluate the unreported or undetected releases of hazardous materials or contaminants at the ITC site. The screening level results from ASPECT were compared to the TCEQ short-term AMCVs and indicted no exceedances.

EPA conducted water sampling in two locations in the drainage ditch feeding into Tucker Bayou and up by the Battleground park area. Samples were analyzed for COD, VOCs, SVOCs, and oil/grease. Sampling was suspended after the breach in containment wall due to safety concerns.

The ASPECT aircraft found detections of acetone, butadiene, isobutylene, 1-butene, and isoprene. ASPECT found exceedances of TCEQ comparison values in the afternoon and found exceedances of the short-term AMCVs for butadiene (1.7 ppm) and isoprene (0.02 ppm).

EPA conducted handheld air monitoring at 61 locations located in residential areas north of the ship channel as the wind was from the south/southeast. Results were reported above the detection limit at five locations for total VOCs and five locations for benzene. Benzene was detected at two of these locations above the short-term AMCVs for benzene (0.18 ppm). EPA conducted additional air monitoring and deployed TAGA to determine if the short-term AMCV for benzene continued to be exceeded.

For safety purposes, there were no remediation actions taking place on the Ship Channel at night, but operations continued at night in the ditch area.

ITC provided a list of foams that were ordered and used during firefighting efforts. ITC planned to sample the foam totes for PFAS/PFOA, as well as the water and foam within the secondary containment once safe to do so.

ITC continued to take water samples every 2 hours at the ditch feeding into Tucker Bayou and sent the samples to an outside laboratory for analysis.

ITC developed a waste management plan for the final disposition of the materials within the tanks and secondary containment.

ITC developed a preliminary waste management plan for the final disposition of the materials within the tanks and secondary containment.

ITC attempted again to start pumping product out of Tank 80-7 (pygas) to an empty tank within another tank farm.

The Pasadena, La Porte, and Deer Park school districts decided to cancel classes for Friday, 22 March 2019, as there was a concern that the same weather conditions that created the elevated benzene levels on the morning of 21 March 2019 may occur again on the morning of 22 March 2019.

TCEQ, EPA, ITC, and Deer Park officials discussed action levels for issuing shelter-in-place advisories for the city. The city determined to leave the action levels at 1 ppm.

A Rapid Assessment Team (RAT) comprised of ITC, TCEQ, and USCG representatives visually assessed and documented the extent of the release along the bayou, starting at approximately 0815 hours; however, the assessment was cancelled due to health and safety reasons upon learning of the breach in the secondary containment.

The Texas Poison Control Network received 33 calls from 17 March 2019 to 21 March 2019. Of these calls, 28 were possible exposures and 5 were requests for information calls.

### **23 March 2019:**

As of 1514 hours, the pumping operations at Tank 80-7 resumed, pumping the material into Tank 80-18. Pumping out of the secondary containment began and was being pumped to Tank 100-28.

EPA delivered an Administrative Order under Section 311 of the Clean Water Act to ITC, requiring ITC to conduct actions to abate or mitigate an imminent and substantial threat to the public health or welfare by the discharge or substantial threat of a discharge of hazardous substances from the above-listed facility into or upon the navigable waters or adjoining shorelines.

The decontamination plan was presented to Unified Command. EPA requested that the plan be separated into two plans - a land decontamination plan and a vessel decontamination plan.

EPA conducted handheld air monitoring operations, roving, and responding downwind of the site within the residential community. The monitoring teams collected readings at 70 locations, with no benzene detections.

EPA conducted surface water sampling at eight locations. Five samples were collected along Buffalo Bayou, and three were collected at locations along the San Jacinto River. Results from previous sampling events in Tucker Bayou on 20 March 2019 and in Buffalo Bayou on 21 March 2019 found exceedances of the TCEQ water quality levels for benzene and xylene in Tucker Bayou and at the confluence of Tucker Bayou and Buffalo Bayou. In addition, naphthalene, ethylbenzene, methyl tert-butyl ether (MTBE), and toluene exceeded the TCEQ levels in the Tucker Bayou sample. EPA continued to sample surface water near the ITC site.

The ASPECT aircraft found no exceedances of the TCEQ comparison values during their flight.

ITC continued air monitoring; there were 1,591 VOCs readings and 1,442 benzene readings. There continued to be detections above the action level for benzene close to the tank farm on Tidal Road and by Dock 4 on Buffalo Bayou.

ITC emptied liquid from the secondary containment down to a level of approximately 1 inch in depth. A layer of foam was maintained over the remaining liquid for vapor suppressant purposes.

#### **24 March 2019:**

Recovery operations continued at Tucker Bayou using nine 130-bbl and two 70-bbl vacuum trucks. A total of 1,310 bbl of oil/water mix were offloaded into Tank 100-28.

The operations branch was divided into four divisions – Division B, Division C, Division E, and Water Operations.

The USCG Captain of the Port opened the San Jacinto River for a brief period to allow vessel traffic through the channel between 1700 hours and 1900 hours.

RAT reported minimal impacts to the shoreline except for a 60-foot x 60-foot pocket of material discovered in the Peggy Lake area. The USCG conducted recovery operations in Peggy Lake area. RAT was scheduled to continue visual assessments and documentation along the bayou shorelines on 25 March 2019.

USCG deployed a test vessel to determine the level of decontamination needed for vessels travelling through the shipping channel.

EPA conducted handheld air monitoring operations, roving and responding downwind of the site within the residential community. The monitoring teams collected readings at 76 locations, with no benzene detections.

ASPECT was unable to fly due to cloud cover. EPA conducted air sampling using TAGA and analyzed the air samples for benzene, toluene, and xylene. The TAGA air sampling results detected exceedances of the short-term AMCV for benzene (0.18 ppm). These exceedances of the short-term AMCV for benzene were shared with Unified Command and local officials.

ITC continued pumping the residual product/water from Tank 80-7 (pyrolysis gasoline), as well as the initiation of pumping of Tank 80-10 (pyrolysis gasoline) and 80-14 (pyrolysis gasoline).

Foaming of the secondary containment and impacted tanks was conducted to prevent re-ignition and to reduce emissions of product vapor. A 2-foot layer of foam (and 1-inch layer of liquid) was maintained within the secondary containment.

#### **25 March 2019:**

The USCG expressed concerns about holding material on the skimmers due to a potential fire hazard. TCEQ, EPA, and USCG agreed to allow ITC to remove the material from the skimmer vessels to be placed in barges that will dispose of the waste at a TCEQ-authorized disposal facility.

The field command was moved to the Battleship due to the wind shift.

Remediation continued in Tucker Bayou using skimmers that were fed into six vacuum trucks, which were decanted into Tank 100-28.

EPA conducted handheld air monitoring operations, roving and responding downwind of the site within the residential community. The monitoring teams collected readings at 77 locations, with no benzene detections.

The EPA ASPECT aircraft found no exceedances of the TCEQ comparison values but was unable to collect chemical information from 0400 hours to 1200 hours due to poor weather conditions. ASPECT conducted a screening level assessment to evaluate the unreported or undetected releases of hazardous materials or contaminants from the facility; no exceedances of the short-term AMCVs were detected.

EPA shipped 15 surface water samples (8 samples collected on 23 March 2019 and 7 samples collected on 24 March 2019) to the Region 5 Laboratory in Chicago, Illinois, for PFAS analysis. Surface water sampling was conducted at seven locations - four along Buffalo Bayou and three along the San Jacinto River. The surface water samples will be analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

TAGA found no exceedances of the short-term AMCVs for benzene, toluene, and xylene within the community.

ITC continued foaming of the secondary containment as necessary to prevent reignition of product and reduce emissions.

ITC continued to pump the water/product liquid from the irrigation ditches around the tank farm into Tank 100-28. Five vacuum trucks were used for this operation.

ITC requested to start releasing its previously treated wastewater unrelated to the incident from its permitted Wastewater Treatment Plant (WWTP). USCG, TCEQ, and EPA agreed to this operation contingent that recovery efforts were not hindered and requested that the flow be kept at a low rate.

An ITC three-man entry team entered the tank farm to determine the viability of the valves on Tanks 80-14 and 80-15. The team was able to open the sump valve on Tank 80-10.

#### **26 March 2019:**

Tucker Bayou operations used one skimmer and two vacuum trucks, which transferred material to Tank 80-18. Recovery operations at Tucker Bayou were run on a 24-hour basis.

The impacted tank farm was isolated from the WWTP, and no materials from that tank farm could be received by the WWTP.

EPA conducted surface water sampling at five sample locations, including one duplicate sample. One sample and a duplicate were collected upstream the confluence of Buffalo Bayou and the San Jacinto River in the Old River (at River Terrace Park, Channelview, Texas). One sample was collected at the confluence of Buffalo Bayou and the San Jacinto River (at the shoreline of Juan Sequin Historic Park).

Two samples were collected in the main channel of the San Jacinto River just upstream the confluence with Buffalo Bayou. The fifth sample was collected downstream in the San Jacinto River. The ASPECT aircraft did not have any readings that exceeded the TCEQ comparison values. The TAGA air sampling results indicated exceedances of the short-term AMCV for benzene (0.18 ppm). These exceedances of the short-term AMCV for benzene were in the vicinity of, and just north of, the ITC site and have been shared with Unified Command and local officials.

EPA conducted handheld air monitoring operations, roving and responding downwind of the Site within the residential community. The monitoring teams collected readings at 73 locations, with no benzene detections.

TCEQ conducted overflight operations to observe the impacted tank farm, Tucker Bayou, and Houston Ship Channel. The team observed several pockets of material that had not been addressed by the USCG or ITC; USCG was made aware of these areas and addressed the spots.

#### **27 March 2019:**

Remediation of Tucker Bayou continued using skimmers that fed into six vacuum trucks, which were decanted into Tank 100-28.

EPA conducted surface water sampling at 10 sample locations. Samples were collected from upstream of the confluence of Buffalo Bayou and San Jacinto River in the Old River (at River Terrace Park, Channelview, Texas), at the shoreline of Juan Sequin Historic Park, in the main channel of the San Jacinto River just upstream the confluence with Buffalo Bayou, and downstream in the San Jacinto River.

USCG recovered 24,364 bbl of material from water operations. Approximately 35,724 bbl of material from the tank farm were recovered. A total of 128 cubic yards of solid waste was generated.

EPA created two air monitoring strike teams comprised of a state representative, an EPA representative, and an ITC representative: one land-based team and one water-based air monitoring team. The purpose of the teams is to conduct handheld roving air monitoring operations and to verify any detections reported above the site action level as a Unified Command team. The two teams collected readings at 50 locations, with no benzene detections.

The EPA ASPECT did not fly due to poor conditions. TAGA found no exceedances of the short-term AMCV for benzene in the community.

ITC submitted a Decanting Plan for review and comment by EPA and TCEQ. EPA and TCEQ discussed ITC's desire to decant liquids pulled from the bayou and ditch to help with storage capacity. The decision was made that decanting operations would not be allowed to proceed due to the characterization of the waste as hazardous.

ITC continued foaming of the secondary containment as necessary to prevent reignition of product and to reduce emissions.

Hydro-cutting activities on Tanks 80-14 and 80-15 were suspended until 28 March 2019 due to delayed equipment and health and safety concerns.

#### **28 March 2019:**

At 1000 hours, ITC expressed concerns to TCEQ and EPA about overflowing the secondary containment due to draining and foaming operations on the tanks. If material was pumped into the ITC's wastewater tanks, it needed to be disposed of as waste and not treated in their WWTP. Vacuum trucks were positioned to facilitate the redistribution.



Foaming of the secondary containment, to prevent reignition and reduce emissions, continued as necessary.

The two air monitoring strike teams continued to rove in the community and within the Houston Ship Channel, responding to any detection above the action level (0.5 ppm of benzene). The teams collected readings at 46 locations, with no benzene detections.

The EPA ASPECT aircraft flew at 0900 to 0941 hours over the tank farm and downwind of the facility and recorded no exceedances. TAGA detected no readings above the AMCVs in the community.

Outfall #003 developed a leak and was releasing material into the ditch; however, it was repaired by ITC.

As of 1800 hours, 35,883 bbl of material had been recovered from on-water operations. As of 2030 hours, an additional 728.6 bbl of material was recovered. As of 1800 hours, 40,385 bbl was recovered from the tank farm. There were approximately 128 cubic yards of contaminated solids (personal protective equipment [PPE], boom, and absorbent pads).

Three vacuum trucks removed material from the irrigation ditches and five vac trucks removed material from Tucker Bayou. Both operations transported the material to Tank 100-31.

### **29 March 2019:**

ITC notified the surrounding industry and local officials after a significant benzene detection at the Vo-Pak facility north of the tank farm, and recommended a shelter-in-place. At 0125 hours, Vo-Pak reported sheltering-in-place.

At approximately 0325 hours, the staging area was evacuated due to elevated benzene levels (0.925 ppm). Further monitoring showed no detections.

EPA conducted surface water sampling at 10 sample locations. Samples were collected from upstream of the confluence of Buffalo Bayou and the San Jacinto River (in the Old River at River Terrace Park and at the shoreline of Juan Sequin Historic Park), in the main channel of the San Jacinto River (upstream of the confluence with Buffalo Bayou), and downstream in the San Jacinto River. The surface water samples were analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

The air monitoring strike teams continue to rove in the community and within the Houston Ship Channel, responding to any detection above the action level (0.5 ppm of benzene). The teams collected readings at 45 locations, with no benzene detections recorded within the community. There were eight detections above the action level within industrial areas surrounding the site, with the highest recording at 2 ppm located at Jacinto Port.

EPA conducted air sampling using TAGA and found exceedances of benzene above the AMCVs within the industrial area of Channelview.

The EPA ASPECT aircraft did not fly.

The EPA OSC met with Congressman Al Green regarding EPA's role on the response.

### **30 March 2019:**

At 0500 hours, benzene readings above 0.5 ppm were recorded near Independence Parkway going towards Battleship State Park. Workers and responders were required to wear a respirator due to elevated benzene readings. The park continues to be closed to public.

The following seven facilities surrounding the site enacted a shelter-in-place: Oxy Vinyls, Lyondell Basell, Oxy Vinyls Battleground, INEOS, Geo Specialty Chemicals, Nouryon Polymer Chemicals, and Braschem.

As of 1800, 112,400 feet of boom had been deployed, 56,162 bbl of product/water had been recovered from water operations, and 40,385 bbl of product/water had been recovered from the tank farm.

Vacuum truck operations at Tucker Bayou and the outfall ditch continued on a 24-hour basis.

EPA conducted surface water sampling at 10 sample locations. Samples were collected from upstream of the confluence of Buffalo Bayou and the San Jacinto River (in the Old River at River Terrace Park and at the shoreline of Juan Sequin Historic Park), in the main channel of the San Jacinto River (upstream of the confluence with Buffalo Bayou), and downstream in the San Jacinto River. The surface water samples were analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

The two air monitoring strike teams continued to rove in the community and within the Houston Ship Channel, responding to any detection above the action level (0.5 ppm of benzene). The teams collected readings at 50 locations, with one benzene detection of 0.75 ppm recorded within the community along the Highway 225 frontage road. Harris County was notified of the detection. There were four additional detections within the industrial area around the site, with the highest detection of 11.15 ppm located at Independence Parkway at the Total facility.

EPA conducted air sampling using TAGA and found exceedances of benzene above the AMCVs within the industrial area of Channelview and La Porte Highway.

The EPA ASPECT aircraft did not fly.

### **31 March 2019:**

Independence Parkway, north of Highway 225, was closed to public traffic for part of the day due to elevated benzene readings. Geo Specialty Chemicals and Nouryon enacted a shelter-in-place.

An additional 57,000-bbl liquid waste collection barge arrived. This barge was in addition to the existing two 30,000-bbl barges that were in use.

No EPA surface water sampling was conducted due to weather conditions. Sampling resumed on 01 April 2019.

The TAGA air sampling results found exceedances of the short-term AMCV for benzene (0.18 ppm). These exceedances were southeast of the ITC site. The unified air monitoring strike team was notified and travelled to the locations in Deer Park to verify.

The Unified Command air monitoring strike team collected readings at 41 locations. The team recorded five benzene detections above 0.5 ppm within the community and three within the industrial areas surrounding the site. The highest recorded detection was 1.175 ppm located at San Jacinto Elementary School. Harris County was notified of the detection.

The EPA ASPECT aircraft found no exceedances of the TCEQ comparison values.

Foaming of the secondary containment to prevent reignition and reduce emissions continued as necessary.

ITC continued air monitoring; there were 2,238 VOC readings (476 detections) and 2,238 benzene readings (516 detections).

TCEQ continued handheld air monitoring; approximately 163 readings were taken. No readings above the Unified Command action level were detected.

As of 1800 hours, 116,400 feet of boom had been deployed, 62,577 bbl of product/water had been recovered from water operations, 69,958 bbl of product/water had been recovered from the tank farm, and approximately 460,000 gallons of foam concentrate had been used for firefighting/suppression and emission suppression.

Vacuum truck operations at Tucker Bayou and the outfall ditch continued on a 24-hour basis.

At approximately 0400 hours, ITC stopped pumping of Tank 80-11 until additional storage capacity was secured.

#### **01 April 2019:**

The number and amount of benzene detections decreased steadily throughout the day due to the ongoing removal of product from tanks and the tank farm, as well as the continued use of foam as needed to suppress vapor release from the impacted tanks and secondary containment.

The Executive Director of TCEQ, the Commander of the USCG 8<sup>th</sup> District, and the acting EPA Regional Administrator visited the site to discuss transitioning, end points, and resource needs.

Flushing in ditches was conducted on the south side of Tidal Road near the coffer dam and the Clean Harbors facility, as well as upper Tucker Bayou to help keep the benzene levels minimal in that area.

ITC announced a frac tank manifold and vacuum truck unloading area was under construction. Four 500-bbl frac tanks were connected in series, allowing four 70-bbl or 130-bbl vac trucks to unload at the same time to the frac tank system.

EPA conducted surface water sampling at 10 sample locations. The surface water samples were collected along Buffalo Bayou and the San Jacinto River, and were analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

The EPA ASPECT aircraft found no exceedances of the TCEQ comparison values during its flight.

The TAGA air sampling results found exceedances of the short-term AMCV for benzene (0.18 ppm) and xylene (1.7 ppm) located adjacent to the impacted tank farm.

The Unified Command air monitoring strike team collected readings at 61 locations, with no detections of benzene above the action level of 0.5 ppm within the community.

The Harris County Fire Marshall's Office began their fire investigation. They controlled access to the tank farm, but operations to remove product and waste from the tank farm and secondary containment area continued.

Vacuum truck operations at Tucker Bayou and the outfall ditch continued on a 24-hour basis. Pumping into the 57,000-bbl barge, docked at the ITC dock, from waste storage tanks began.

ITC continued air monitoring; there were 3,825 VOC readings (627 detections) and 2,720 benzene readings (445 detections).

TCEQ continued handheld air monitoring; approximately 166 readings were taken. No readings above the Unified Command action level were detected.

As of 1900 hours, a total of 61,807 barrels of contaminated material had been recovered by the on-water operations team. 92,222 barrels of contaminated material had been removed from the tank farm and ditches, 128 cubic yards of contaminated material (PPE, boom, and absorbent pads) had been recovered, and approximately 118,300 feet of boom had been deployed and an additional 4,100 feet of off-shore boom had been deployed.

#### **02 April 2019:**

TCEQ and EPA received sampling results showing both COD and pH were within their permitted limits.

The flushing plan for Tucker Bayou developed by EPA, TCEQ, USCG, and ITC was approved by Unified Command. Flushing operations will begin on 03 April 2019.

The EPA ASPECT aircraft found no exceedances of the TCEQ comparison values.

The TAGA air sampling results were compared to the TCEQ short-term AMCVs and found no exceedances of the short-term AMCVs.

EPA conducted surface water sampling at 10 sample locations. The surface water samples were collected along Buffalo Bayou and the San Jacinto River, and were analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

The Unified Command air monitoring strike teams collected readings at 49 locations, with no detections of benzene above the action level of 0.5 ppm within the community.

ITC was informed that their current Texas Pollutant Discharge Elimination System (TPDES) permit did not authorize the treatment of the wastes generated from this event in their WWTP.

TCEQ continued handheld air monitoring; approximately 152 readings were taken. No readings above the Unified Command action level were detected.

ITC continued air monitoring; there were 4,266 VOC readings (770 detections) and 2,955 benzene readings (619 detections).

Vacuum truck operations at Tucker Bayou and the outfall ditch continued on a 24-hour basis. There were currently 26 vacuum trucks on-site.

As of 1900 hours, 128,500 feet of boom had been deployed, 72,703 bbl of product/water had been recovered from water operations, 97,239 bbl of product/water had been recovered from the tank farm, 128 cubic yards of contaminated solids had been recovered, approximately 468,000 gallons of foam concentrate were used for firefighting/suppression and emission suppression, and 1,938 people were working on-scene.

### **03 April 2019:**

The rain event during the evening removed the foam that had been sprayed on the tanks. This resulted in an increase in benzene detections and readings around the tank farm and Tidal Road (all within the hot zone) starting around 2000 hours and throughout the night. Readings ranged from 0.5 ppm to 6.2 ppm along Tidal Road. The facility began foaming again around 2100 hours. Heavy rain moved in around 0030 hours on 4 April, and lightning started shortly after 0100 hours. Field teams stood down per lightning protocols. Once the facility started foaming again, after the rain moved through, Dow Chemical conducted a self-called, shelter-in-place from 2300 hours on the 3<sup>rd</sup> to 0230 hours on the 4<sup>th</sup>.

The Unified Command air monitoring strike team collected readings at 65 locations, with no detections of benzene above the action level of 0.5 ppm within the community. Within the industrial area surrounding the site, the strike team recorded a benzene detection of 1.14 ppm located at Texas Terminals LP.

ASPECT aircraft found no exceedances of the TCEQ comparison values.

The TAGA air sampling results were compared to the TCEQ short-term AMCVs and found no exceedances of the short-term AMCVs.

EPA conducted surface water sampling at 10 sample locations. The surface water samples were collected along Buffalo Bayou and the San Jacinto River, and were analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

ITC continued community air monitoring; there were 742 VOC readings (22 detections) and 544 benzene readings (10 detections).

As of 1900 hours, 125,400 feet of boom had been deployed, 80,920 bbl of product/water had been recovered from water operations, 102,729 bbl of product/water had been recovered from the tank farm, approximately 465,000 gallons of foam concentrate had been used for firefighting/suppression and emission suppression, and 1,945 federal, state, local, and ITC responders were on-site.

#### **04 April 2019:**

The flushing of Tucker Bayou and skimming activities occurred 24 hours per day. Benzene detections did not increase during the flushing activities.

Work within the tank farm continued with Tanks 80-2, 80-3, 80-7, and 80-8 being drained or vacuumed. Removal of sludge from Tanks 80-14 and 80-15 started, but stopped due to elevated benzene levels.

Harris County and TCEQ received six calls from citizens in the Channelview area reporting foam in residential area. ITC developed a plan to address the foam, and EPA provided comments on the plan.

The Unified Command air monitoring strike team collected readings at 58 locations, with no detections of benzene above the action level of 0.5 ppm within the community.

EPA conducted surface water sampling at 10 sample locations. The surface water samples were collected along Buffalo Bayou and the San Jacinto River, and were analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

ASPECT aircraft did not fly due to low ceiling.

The TAGA air sampling results found no exceedances of the short-term AMCVs; however, the TAGA air sampling results found exceedances of the short-term AMCV for benzene (0.18 ppm) and xylene (1.7 ppm) directly north of the ITC facility. These exceedances of the short-term AMCV for benzene and xylene were shared with Unified Command and local officials.

ITC continued community air monitoring; there were 730 VOC readings (10 detections) and 618 benzene readings (8 detections).

#### **05 April 2019:**

The Unified Command air monitoring strike team collected readings at 57 locations, with no detections of benzene above the action level of 0.5 ppm within the community. One detection of benzene was recorded of 4.5 ppm located at the Southwest Shipyard and Market Street, which is within the industrial area located across the channel from the site.

EPA conducted surface water sampling at 10 sample locations. The surface water samples were collected along Buffalo Bayou and the San Jacinto River, and were analyzed for PFAS, VOCs, SVOCs, COD, and oil and grease.

ASPECT did not fly due to weather conditions.

The TAGA air sampling results were compared to the TCEQ short-term AMCVs and found no exceedances of the short-term AMCVs.

At approximately 1400 hours, EPA received a phone call from the San Jacinto Superfund Site Responsible Party's contractor stating that they observed a sheen in the San Jacinto River upstream and

downstream of the site. In addition to the sheen, they also observed dead catfish and a loon in the area of the site cap. The Unified Command deployed RAT to investigate the report and were unable to locate a sheen or any dead fish in the San Jacinto NPL Site area.

ITC reported a benzene exceedance of 20 ppm at the tank farm. The elevated benzene concentrations dissipated within 2 minutes. After 4 minutes of the exceedance, the benzene concentrations dropped to 0.12 ppm.

At approximately 1430 hours, water operations at Division B were shut down due to safety concerns. The crew aboard a fireboat was misting with a firehose, and workers were accidentally sprayed with a mixture of water and oil. The affected personnel were immediately decontaminated. There were no injuries because of the incident.

ITC continued using pressurized water to liquefy the sludge in Tanks 80-14 and 80-15, but the operations stopped due to elevated benzene levels. At 2200 hours, ITC reported using a thermal oxidizer to degas Tanks 80-14 and 80-15 to decrease off-gassing during sludge break-up operations.

ITC reported that 14,000,000 gallons of wastewater was stored in the wastewater treatment tank as of 0730 hours.

ITC prepared a plan to sample and remove the foam from residential yards that were reported on 04 April 2019 by residents to TCEQ and Harris County PCSD.

ITC continued applying foam to the tanks and tank farm area as needed and continued 24-hour operations for flushing of Tucker Bayou.

ITC continued community air monitoring; there were 638 VOC readings (0 detections) and 479 benzene readings (0 detections).

As of 1900 hours, 137,400 feet of boom had been deployed, 89,576 bbl of product/water had been recovered from water operations, 127,457 bbl of product/water had been recovered from the tank farm, and approximately 465,000 gallons of foam concentrate had been used for firefighting/suppression and emission suppression.

#### **06 April 2019:**

The Unified Command air monitoring strike team collected readings at 51 locations, with no detections of benzene above the action level of 0.5 ppm within the community. One detection of benzene was recorded of 1.1 ppm reported at the same location as 05 April 2019 sampling (Southwest Shipyard and Market Street), within the industrial area located across the channel from the site.

ASPECT did not fly due to weather conditions and maintenance.

The TAGA air sampling results found no exceedances of the short-term AMCVs for toluene or xylene. TAGA detected a single exceedance of the short-term AMCV for benzene at a location northeast of the Port of Houston.

The water strike team did a follow-up investigation of a fish kill reported at the San Jacinto River Waste Pit, a Superfund site. The location of the Superfund site is near the Southwest Shipyard facility. At approximately 1300 hours, the water strike team briefly detected benzene at 0.5 ppm on the west side of the island; however, the benzene reading was not sustained long enough for a 60-second average detection. The water strike team did not find dead fish or a sheen on the water on any side of the Superfund site.

ITC reported that average benzene air concentrations were 0.5 ppm in Division E (impacted tank farm).

ITC continued degassing Tanks 80-14 and 80-15 using a thermal oxidizer to decrease off-gassing and continued sludge break-up operations for Tank 80-15. ITC continued to drain Tank 80-8 into vac trucks for transport to designated tanks for future disposal. The tanks were to be pumped down with only residual amounts remaining by 08 April 2019.

After concurrence with Unified Command, ITC constructed an underflow dam at the junction of the railroad tracks and west side of Tidal Road in anticipation of heavy rainfall on 07 to 08 April 2019.

TCEQ continued handheld air monitoring in the surrounding communities; no readings above the Unified Command action level were detected.

The USCG Captain of the Port continued the controlled opening of the Ship Channel, with traffic during the daytime only. Decontamination vessels were being positioned to help vessels that may have residue on the hulls.

ITC continued 24-hour operations for flushing Tucker Bayou and continued applying foam to the tanks and tank farm area as needed.

The Harris County Fire Marshall began the fire cause investigation at the tank farm.

As of 1900 hours, 147,300 feet of boom had been deployed, 106,723 bbl of product/water had been recovered from water operations, 153,980 bbl of product/water had been recovered from the tank farm, approximately 465,000 gallons of foam concentrate had been used for firefighting/suppression and emission suppression. There were 223 total vessels involved in the response: 109 workboats, 89 barges, 25 small skimming vessels, along with 119 skimmers, and 1,943 response personnel.

#### **07 April 2019:**

EPA conducted handheld air monitoring at 61 locations in the surrounding communities. Results were reported above the detection limit at two locations for total VOCs and at one location for benzene. Benzene was detected above the TCEQ short-term AMCV (0.18 ppm). EPA continued to conduct additional air monitoring and to deploy TAGA to determine if VOCs continued to be detected.

ASPECT did not fly due to weather conditions.

The TAGA air sampling results found no exceedances of the short-term AMCVs.

TCEQ continued handheld air monitoring in the surrounding communities: no readings above the Unified Command action level were detected.

ITC received permission from TCEQ to start re-circulating the wastewater treatment process without discharging any water.

ITC started degassing Tank 80-13 and continued degassing Tanks 80-14 and 80-15 using a thermal oxidizer to decrease off-gassing, and continued sludge break-up operations for Tank 80-15.

ITC continued to drain Tanks 80-5 and 80-8 into vac trucks for transport to designated disposal tanks, to conduct cleaning operations on Tanks 80-2 and 80-3, and to apply foam to the tanks and tank farm area as needed.

As of 1900 hours, 147,300 feet of boom had been deployed, 110,070 bbl of product/water had been recovered from water operations, 153,980 bbl of product/water had been recovered from the tank farm,

and approximately 465,000 gallons of foam concentrate had been used for firefighting/suppression and emission suppression.